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Three New Species of Annonaceae from Nothern South America

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Three New Species of Annonaceae from Northern South America

By Rob. E. Fries

With 2 Figures in the text

A small collection of *Annonaceae* was recently sent to me for examination from the Kew Herbarium in London. These had been collected in recent years in British Guiana by the local Forest Department, which has already done much excellent work, also of purely botanical interest, in exploring the enormously rich tree flora of the country. Although the *Annonaceae* of these districts have in the last few years been the objects of examination, and one would have thought that most of them would be known by now, this collection proved to contain a couple of hitherto unknown species of rather great systematic interest (one species of *Guatteria* and one of *Annona*). These are now described here. At the same time I received from the Kew Herbarium a species of *Xylopia* from the adjoining regions of Brazil (the Rio Negro district), which to my mind is also new, and which I therefore take the opportunity of describing at the same time.

I beg to convey to the Directors of the Kew Herbarium my sincere gratitude for their courtesy in entrusting the examination of these valuable collections to me.

Guatteria conspicua R. E. Fr. n. sp. (Fig. 1 *f–i*) — Arbor 7–8 m alta; ramuli novelli glabri cinnamomei. Foliorum petiolus incrassatus, glaber, 3–5 mm longus; lamina rigida, novella (in gemmis) supra glabra, subtus sericea, adulta utroque latere glaberrima sed exsiccata rugulosa, supra sordide viridis, subtus flavovirens vel plus minus olivacea, oblonga vel oblongo-lanceolata, ad basin acuta et breviter in petiolum decurrens, apice breviter angustata et in cuspidem circ. 1 cm longam obtusam contracta, 12–25 cm longa et 4–7 cm lata; costa supra plana vel basin versus paulo impressa, subtus valde prominens teres; nervi laterales I. tenuissimi et vix visibiles utrinque 14–18, angulo fere 90° exeuntes, sat recti et 3–5 mm intra marginem arcuato-conjuncti; reticulum venularum haud conspicuum. Flores in axillis foliorum persistentium solitarii sed etiam e ramis efoliatis vel trunco exeuntes; pedicelli crassi, 5–8 mm longi, nigri, circ. ad medium articulati, parte inferiore bracteis minutis paulo hirsutis parata, parte superiore glaberrima. Sepala nigra, ovato-rotundata et acuta, utroque latere paulo hirsuta, circ. 5 mm longa et lata. Petala crassa, ovata et apice rotundata, circ. 12 mm longa, exteriora ferrugineo-sericea, interiora cinereo-tomentella et intus apice excepta glabra. Stamina 1.5–2 mm longa, disco flavido plano-convexo breviterque setosa. Monocarpia numerosa, glabra et (exsiccata) nigra, ellipsoideo-oblonga, acuta, 9–10 mm longa et circ. 4 mm crassa, basi in stipitem 3–4 mm longum subito contracta. Semina monocarpii forma.

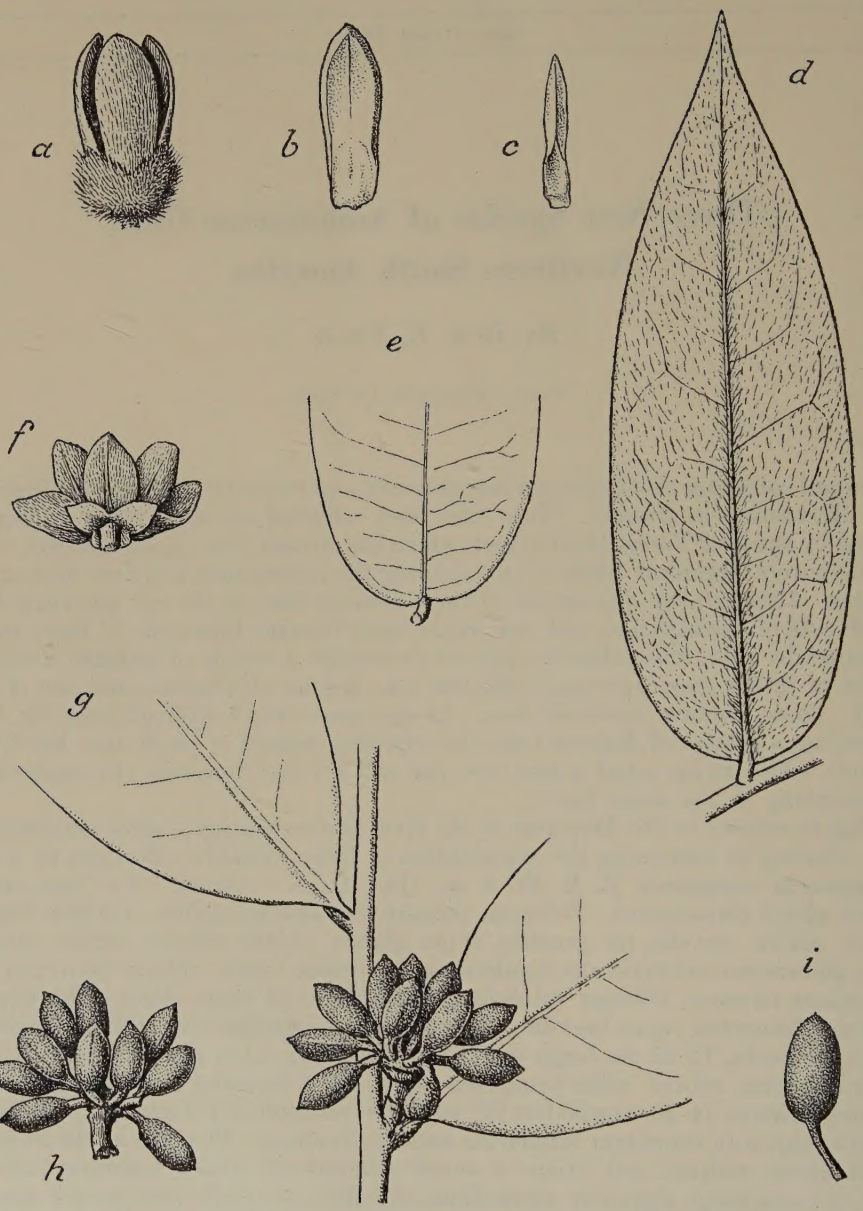

Fig. 1. — *a—e. Xylopia crinita* R. E. Fr. *a.* Flower; *b—c.* Petals; *d.* Leaf from under side; *e.* Base of leaf from upper side. — *f—h. Guatteria conspicua* R. E. Fr. *f.* Flower; *g—h.* Branch and fruits. — *i. Guatteria scandens* Ducke. Monocarp. — All $^{1}/_{1}$.

British Guiana: 85 miles Bartica-Potaro Road in *Dicymbe* forest on white sand (with flowers and fruits 2. Nov. 1947. — Forest Dep., Record No. 5542; Typus in Herb. Kew.). "Fruit scarlet when ripe."

The species *conspicua* should apparently most suitably be ranged in the section *Leiophyllum* R. E. Fr., although its leaves have not the smoothness implied by the name of the section, which is so characteristic of its best known and typifying species, *Guatteria scandens*, seeing that the *conspicua* leaves when dried become more or less wrinkled. Otherwise, the leaf types of the two species agree excellently: large and stiff, perfectly glabrous on their upper sides, their under sides provided with short, adpressed hairs when very young, which disappear later in both species. The flowers, too, of the two species agree on the whole, particularly in the connective discs of the stamina of both being provided with fine bristles, even though these are shorter in *conspicua* than in *scandens*. The structural agreement of the fruits is striking (cf. figs. 1 *g* and *i*). Another remarkable fact is that (according to a note on the label) *conspicua* may be both cauliflorous and provided with axillary flowers, a condition already known in *scandens*, which may bear flowers in the axils as well as on old branches and on the stem (cf. Rob. E. Fries, "Sobre la cauliflorία en la familia de las Anonáceas," in Lilloa XVI p. 259. 1949).

Guatteria conspicua differs, however, distinctly from the species *scandens*. It is a tree, not a liane like the latter. Its leaves are more oblong, and narrower in relation to their lengths. Its pedicels are shorter (only 0.5–0.8 mm long), while those of *scandens* are up to 1.5–3 cm, its monocarps are much smaller, and their stipes much shorter (cf. figs. 1 *g* and *i*).

Including the new species now described, the *Leiophyllum* section comprises three species, all distributed in well delimited districts. Of *Guatteria conspicua*, only the type specimen from British Guiana is so far known; *scandens* also occurs in the same district, but is spread from there through Dutch and French Guiana down to the adjoining part of Brazil (Pará), and *Wachenheimii* — the third species of the section — belongs to the flora of French Guiana. This species is clearly differentiated from the others by its small, oblanceolate leaves, slowly tapering towards the base.

Xylopia crinita R. E. Fr. n. sp. (Fig. 1 *a–e*). — Arbor humilis, circ. 7 m alta; internodia 1–1.5 cm longa; ramuli novelli pilis 1–1.5 mm longis dense criniti, mox fere glabrescentes. Foliorum petiolus 2–3 mm longus; lamina papyracea, supra dense verruculosa, (exsiccata) sordide viridis et glabra, subtus olivacea et pilis patentibus 2–3 mm longis ferrugineis pallescentibus sat laxe sed in costa densius vestita, lanceolata, basi rotundata et ima basi minute sed conspicue inciso-cordata, apicem versus subsensim longeque angustata, acuta, 8–12 cm longa et 2–3 cm lata; costa in latere superiore basin versus paulo impressa, subtus valde prominens teres; nervi secundarii graciles cum venulis utroque latere prominuli. Flores (semper?) solitarii, fere sessiles, flavidi. Calyx circ. 1 cm altus, extus dense ferrugineo-crinitus, intus glaberrimus, circ. ad medium in lobos 3 late deltoideos acutos incisus. Alabastra breviter cylindrica, circ. 1 cm diam. Petala coriacea; exteriora crassa, plana, oblonga, supra medium paulo dilatata et apice breviter acuta, extra pilis adpressis densissimis alutaceo-sericea, intus brevissime tomentella et basin versus glabra, 20–25 mm longa, 8–9 mm lata; petala interiora exterioribus paulo breviora, e basi tenui concava linearia et tetragona (2–3 mm diam.), acuta, minute puberula. Stamina 2–2.5 mm longa, linearia. (Fructus ignotus.)

Brasilien: "Estado do Amazonas, Rio Negro, Ilha das Flores, foz do R. Uaupés,

catinga (mata virgem). Flores amarelas; madeira dura" (with flowers 20. Oct. 1947. — J. M. PIRES No. 683; Type in Kew Herb.).

Together with the species *excellens* R. E. Fr., *macrantha* Tr. et Pl., and *xylantha* R. E. Fr., *Xylopia crinita* constitutes a well defined group of species in this genus, characterized by relatively large flowers with thick, ligneous petals, of which the outer are flat, oblong-elliptical, briefly pointed at the top, and the inner narrow, almost needle-shaped, and quadrangularly prismatic. The centre of distribution of these species is the Amazonas basin, one of them (*macrantha*) occurring in Venezuela, Panamá, and Colombia.

The new species *crinita* described here differs a good deal in leaf shape from the three others, its leaves being rounded at the base and distinctly, though not very deeply, cordate (cf. Fig. 1 *d–e*). The leaf bases of *macrantha* and *excellens* are also rounded (most markedly in the latter), but without any incisions, while the leaf base of *xylantha* is acute. Another characteristic of *crinita* is that the upper sides of its leaves are covered with small verrucae. The four species can be differentiated as said in the following classification scheme:

I. Leaves pointed or rounded at base, but not cordate, upper side non-verrucous.
  a. Young branchlets more or less adpressed hairy. Leaves not glaucous beneath.
    1. Leaves lanceolate, gradually tapering towards the apex. *macrantha.*
    2. Leaves elliptic, more or less abruptly contracted into 1–2 cm long apices. *xylantha.*
  b. Young branchlets closely covered by rusty-brown, patent hairs. Leaves glaucous beneath, large, elliptic, rounded at both ends and abruptly narrowed at the apex into an 0.5–1.5 cm long cusp. *excellens.*

II. Leaves rounded and cordate at base, slowly tapering toward the apex, densely verruculose-punctulate on upper side. Young branchlets covered by patent hairs. *crinita.*

Annona tenuipes R. E. Fr. n. sp. (Fig. 2 *a–d, f*). — Arbor circ. 9 m alta, trunco 7–8 cm diam.; ramuli graciles, sparse rubiginoso-sericei, mox glabrescentes; internodia 1–3.5 cm longa. Foliorum petiolus gracilis, 0.8–1.2 cm longus; lamina tenuiter membranacea, supra viridis glaberrima et nitida, subtus glaucescens et pilis brevibus adpressis sat laxe obsita, inferiora ramulorum elliptica, superiora oblongo-lanceolata, omnia basi acuta, apice sensim vel plus minus abrupte acuminata, 8–18 cm longa et 4–5 cm lata; costa basin versus supra impressa, subtus prominens cinnamomea; nervi laterales I. 8–10, tenues, sursum curvati et intra marginem plus minus irregulariter conjuncti, sicut reticulum sat laxum utroque latere prominuli. Inflorescentiae 2–3-florae, juxta infra folium secundum ramulorum sessiles vel 1–2 mm longe pedunculatae; pedicelli florum tenues, 12–15 mm longi, breviter rubiginoso-sericei, circ. ad medium bractea minuta parati. Sepala basi coalita, extra paulo ferrugineo-sericea, late ovato-triangularia, acutiuscula, 1.5 mm longa et 2–2.5 mm lata. Petala carnosa; exteriora rotundato-ovata, acuta, circ. 5 mm longa et lata, basi cum interioribus connata, extra glaucescentia et sericea, intus glabra; interiora tenuiora, rhombea, extra minute tomentella, circ. 4 mm longa et lata. Staminum filamenta 0.4 mm, antherae 0.6 mm longae; connectivum supra antheram non productum, non dilatatum. Ovaria sub anthesi concreta, corpusculum ovoideum acutum formantia. (Fructus ignotus.)

British Guiana: 90 miles Bartica-Potaro Road, Jennesin Marsh on pegass over white sand (with flowers 28. Oct. 1947. — Forest. Dep., Record No. 5522; Type in Herb. Kew.).

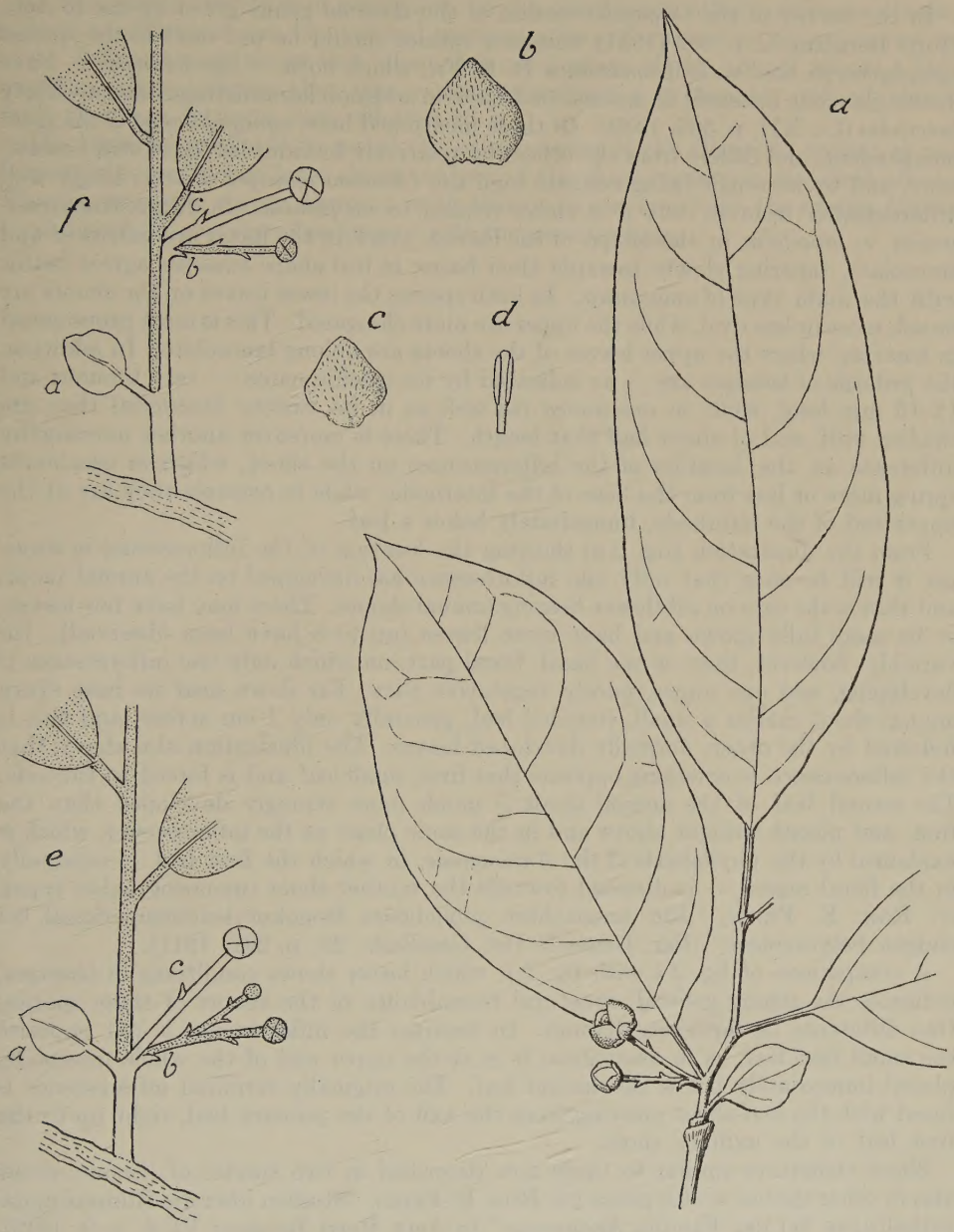

Fig. 2. — *a—d. Annona tenuipes* R. E. Fr. — *a.* Branchlet with flowers $^{1}/_{1}$; *b—c.* Outer and inner petals from outside, $^{3}/_{1}$; *d.* Stamen, $^{10}/_{1}$. — Skeleton drawings of the inflorescence structure in *Annona amazonica* R. E. Fr. (*e*) and *tenuipes* (*f*).

In the survey of the *Oligantha* section of the *Annona* genus given by me in Acta Horti Bergiani X, p. 262 (1931), this new species should be put next to the species *symphyocarpa* Sandw. and *amazonica* R. E. Fr., which both — like *tenuipes* — have leaves glaucous beneath; of *amazonica* I have in addition later distinguished a variety *lancifolia* (l.c. XII, p. 565, 1939). Of those mentioned here, *symphyocarpa* is the most independent, and differs from the others by relatively broader leaves of stiff consistency, and by its sepals being connate high up. *Annona tenuipes* is accordingly well differentiated from it, but it is closer related to *amazonica*. It differs from *amazonica* v. *lancifolia* in the shape of the leaves, which in the latter are narrower and lanceolate, tapering slowly towards their bases; in leaf shape *tenuipes* agrees better with the main type of *amazonica*. In both species the lower leaves on the shoots are broad, more or less oval, while the upper are more elongated. This is most pronounced in *tenuipes*, where the upper leaves of the shoots are oblong lanceolate. In addition, the pedicels of *tenuipes* are — as indicated by its specific name — very tenuous and 12–15 mm long, while in *amazonica* (as well as in its variety *lancifolia*) they are thicker, stiff, and of about half that length. There is moreover another noteworthy difference in the location of the inflorescences on the shoot, which in *amazonica* spring more or less from the base of the internode, while in *tenuipes* they are at the upper end of the internode, immediately below a leaf.

From the illustration (fig. 2 *a*) showing the location of the inflorescence in *tenuipes* it will be seen that only one inflorescence has developed on the annual shoot, and that is the case on all flower-bearing annual shoots. These may have few leaves, or be more fully grown and have more leaves (up to 8 have been observed). Invariably, however, there is one basal, floral part, on which only one inflorescence is developing, and one upper, purely vegetative part. Far down near its base every annual shoot carries a small, rounded leaf, generally only 1 cm across, and this is followed by the other, normally developed leaves. The illustration also shows that the inflorescence is emerging opposite that first, small leaf and is forced to the side. The second leaf of the annual shoot is much more strongly developed than the first, and placed straight above and in the same plane as the inflorescence, which is explained by the phyllotaxis of the *Annonaceae*, in which the first leaf — especially in the floral region — is directed towards the mother shoot (monocotyledon type); cf. ROB. E. FRIES, "Ein unbeachtet gebliebenes Monokotyledonenmerkmal bei einigen Polycarpicae" (Ber. Deutsch. Bot. Gesellsch. 29, p. 292, 1911).

A comparison of fig. 2 *e* with fig. 2 *f*, which latter shows conditions in *tenuipes*, indicates the strong general structural resemblance of the shoots of these species. One difference is, however, distinct. In *tenuipes* the inflorescence is not opposite the small first leaf, as in *amazonica;* it is at the upper end of the whole internode, placed immediately below the second leaf. The originally terminal inflorescence is fused with the leaf-shoot growing from the axil of the primary leaf, right up to the first leaf of the axillary shoot.

Shoot structures similar to those now described in two species of *Annona* occur also in other species of this genus (cf. ROB. E. FRIES, "Studien über die Blütenstandsverhältnisse bei der Familie Anonaceae" in Acta Horti Bergiani VI: 6, p. 9, 1919). What is remarkable in this case is, however, that these two different types of shoots are apparently fixed to two species as systematically closely related as *amazonica* and *tenuipes*. In the richly flowering material available to me of these two, only one single, insignificant modification was observed (in *amazonica*), consisting in the inflorescence — also here solitary on the shoot — being opposite the second, not the first, leaf.

In the variety *lancifolia* of *amazonica*, on the other hand, other conditions obtain, in that no difference can be observed between a lower floral and an upper vegetative part. Inflorescences occur here along a large portion of the annual shoots. This might possibly indicate that this variety represents a systematic unit of higher rank than has hitherto been allotted to it.

The material available to me of the other species of the *Oligantha* section is unfortunately insufficient for a closer analysis of the shoot structures discussed above. The species *cacans* agrees, however, with *amazonica var. lancifolia*, the species *Duckei* — and possibly also *symphyocarpa* — with the *tenuipes* type.

Tryckt den 21 november 1950

Uppsala 1950. Almqvist & Wiksells Boktryckeri AB